

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3-7, and 9-12 are currently pending. Claim 8 has been canceled without prejudice; and Claims 1, 3, 4, 7, 9, and 10 have been amended by the present amendment. The changes to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 1 and 3-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0123384 to Agee (hereinafter “the ‘384 application”) in view of U.S. Patent No. 7,286,593 to Banerjee (hereinafter “the ‘593 patent”).

Amended Claim 1 is directed to a method for transmitting data in a telecommunication system that includes at least a first transceiver and a second transceiver linked together by means of at least one communication channel, at least one of the transceivers being mobile, the method comprising: (1) spreading the data over a plurality of components; and (2) an equalization step of multiplying each of the components resulting from the spreading step by a corresponding predetermined equalization value representative of communication conditions within the communication channel. Further, Claim 1 clarifies that at least one predetermined equalization value is determined so as to account for a Doppler effect resulting from a movement of the mobile transceiver, which adversely affects the communication conditions within the communications channel. Further, Claim 1 has been amended to clarify that each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in said communication

channel, and an additional noise variance representative of the Doppler effect. The changes to Claim 1 are supported by the originally filed specification and do not add new matter.¹

Regarding the rejection of Claim 1 under 35 U.S.C. § 103, the Office Action asserts that the '384 application discloses everything in Claim 1 with the exception of detailed "disclosure of the equalization equations,"² and relies on the '593 patent to remedy that deficiency.

The '384 application is directed to a stacked-carrier spread spectrum communication system that is based on frequency domain spreading in which a time-domain representation of a base band signal is multiplied by a set of stacked complex sinusoidal carrier waves. As shown in Figure 9, the '384 application discloses a delay Doppler equalizer unit 274 and a delay Doppler estimator unit 273. However, as admitted in the outstanding Office Action, the '384 application fails to disclose a predetermined equalization values, wherein each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in the communication channel and an additional noise parameter representative of the Doppler effect, as recited in Claim 1.

The '593 patent is directed to a channel estimator for determining channel weighting coefficients for a finger of a RAKE receiver. In particular, as shown in Figure 3, the '593 patent discloses that the weighting coefficients $b(n)$ in each of the fingers of the RAKE receiver 300 are calculated by a channel estimation filter that uses the pilot channel signals transmitted by base stations 101, 102, and 103 and that optimizes the weighting coefficients $b(n)$ over a range of Doppler frequencies using the average MMSE criterion.³ In particular, the '593 patent discloses the channel estimator 400 shown in Figure 4, which includes filters 440a and 440b, which produce outputs H1 and H2, which are used as the weighting coefficients, i.e., $b(n)$, for the fingers of the RAKE receiver. Further, the '593 patent

¹ See, e.g., Figure 1 and the discussion related thereto in the specification, as well as original Claim 2.

² See page 3 of the outstanding Office Action.

³ '593 patent, column 6, lines 21-28.

discloses that, regarding the channel estimation filter, the transfer function of the filter in the frequency domain is determined as shown in column 8 of the '593 patent, wherein a probability density function for the Doppler frequency must be assumed. In particular, the '593 patent discloses that the transfer function of the filter is determined by averaging over the possible range of Doppler frequencies using the assumed probability density function. By so doing, the '593 patent discloses that the '593 system has several advantages over the prior art systems that use MMSE channel estimation and require knowledge of signal-to-noise ratios and Doppler frequencies. In particular, the '593 patent discloses that "there is no need for a Doppler estimator or a per finger SIR estimator" and that "the filter structure does not change with changes in ... Doppler and SIR."⁴ Thus, the '593 patent notes that "the present invention performs sub-optimally compared to the prior art at a particular Doppler value and SIR setting. However, the present invention gives the best performance for the ensemble average for all Doppler settings and performance simulations demonstrate acceptable performance at the entire range of expected Doppler frequencies."⁵ Thus, Applicants respectfully submit that the '593 patent *teaches away* from using an additional noise variance representing a Doppler effect, as required by Claim 1. In particular, Applicants note that the equation shown in line 20 of column 8 in the '593 patent regarding the transfer function of the filter merely includes a variance value for the noise estimation, but does not disclose a variance representative of the Doppler effect. Rather, as discussed above, the '593 patent averages over all Doppler frequencies using a model probability density function, and therefore does not have a need to model the Doppler effect using an additional noise variance representative of the Doppler effect, as required by Claim 1. In summary, Applicants respectfully submit that the '593 patent fails to disclose that each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level

⁴ '593 patent, column 12, lines 39-43. Emphasis added.

⁵ '593 patent, column 12, lines 48-53.

in the communication channel and an additional noise variance representative of the Doppler effect, as recited in Claim 1.

Thus, no matter how the teachings of the '384 application and the '593 patent are combined, the combination does not teach or suggest that each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in the communication channel and an additional noise variance representative of the Doppler effect, as recited in amended Claim 1. Accordingly, Applicants respectfully submit that the rejection of Claim 1 is rendered moot by the present amendment to that claim.

Independent Claim 7 has been amended to incorporate the limitation recited in dependent Claim 8. In particular, Claim 7 recites that each predetermined equalization value is determined based on a parameter representative of a noise level in the communication channel and an additional noise variance representative of the Doppler effect. Accordingly, as set forth above, Applicants respectfully submit that the '384 application and the '593 patent fail to disclose the additional noise variance representative of the Doppler effect recited in amended Claim 8. Accordingly, Applicants respectfully submit that the rejection of Claim 7 (and all associated dependent claims) is rendered moot by the present amendment to Claim 7).

Further, Applicants note that Claim 3 clarifies that the additional noise variance representative of the Doppler effect increases with an amount of time elapsed since the incoming signal has been received by the mobile transceiver. Applicants respectfully submit that the '593 patent fails to teach or suggest this limitation. In this regard, Applicants note that the Office Action relies on column 7, line 53 to column 8, line 49 as well as column 10, lines 1-63 in the '593 patent as disclosing this limitation. However, Applicants note that these sections in the '593 patent relate to the derivation of the disclosed filter, but do not disclose an additional noise variance representative of the Doppler effect, and clearly do not

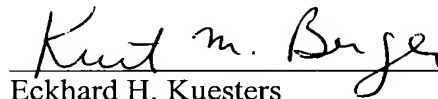
disclose that the variance would increase with the amount of time elapsed since the incoming signal has been received by the mobile transceiver, as recited in Claim 3. If the Examiner insists on maintaining this rejection of Claim 3 in a subsequent Office Action, Applicants respectfully request that the future Office Action indicate with more specificity how this limitation is disclosed by the '593 patent.

Thus, it is respectfully submitted that independent Claims 1 and 7 (and all associated dependent claims) patentably define over any proper combination of the '384 application and the '593 patent.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/07)

Kurt M. Berger, Ph.D.
Registration No. 51,461